In the Claims:

Please amend claims 1, 18, 19, 20, and 34 as indicated below.

1. (Currently amended) A system, comprising:

a processor; and

a memory comprising program instructions, wherein the program instructions are executable by the processor to implement:

file system software configured to:

assign and migrate data in a multi-class file system comprising a plurality of storage classes;

provide access to the data in the multi-class file system to one or more applications; and

migrate data that has not been modified for a given time interval from a first storage class of the plurality of storage classes to a second storage class of the plurality of storage classes, wherein the migrated data remains online in the multi-class file system, wherein the data is readable but not modifiable by the one or more applications while the data is on the second storage class; and

a backup mechanism configured to back up the second storage class less frequently than the first storage class.

2. (Original) The system as recited in claim 1,

wherein the file system software is further configured to migrate data that has not been modified for a longer given time period from the second storage class to a third storage class of the plurality of storage classes, wherein the data is not modifiable by the one or more applications while the data is on the third storage class; and

wherein the backup mechanism is further configured to back up the third storage class less frequently than the second storage class.

3. (Original) The system as recited in claim 1,

wherein the file system software is further configured to migrate data that has not been modified for a longer given time period from the second storage class to a third storage class of the plurality of storage classes, wherein the data is not modifiable by the one or more applications while the data is on the third storage class;

wherein the backup mechanism is further configured to back up the third storage class after said migrating the data that has not been modified for a longer given time period from the second storage class to the third storage class;

wherein the file system software is further configured to migrate the data that has not been modified for a given time interval from the first storage class to the second storage class after said migrating the data that has not been modified for a longer given time period from the second storage class to the third storage class; and

wherein the backup mechanism is further configured to back up the second storage class after said migrating the data that has not been modified for

the given time period from the first storage class to the second storage class.

4. (Original) The system as recited in claim 1,

wherein, to back up the second storage class, the backup mechanism is further configured to generate an image-based full backup of the second storage class after said migration of the data to the second storage class; and

wherein, to back up the first storage class, the backup mechanism is further configured to generate image-based full backups of the first storage class and one or more incremental backups of the first storage class between the full backups of the first storage class.

5. (Original) The system as recited in claim 1, wherein the second storage class is write-locked, and wherein the file system software is further configured to:

disable the write lock of the second storage class prior to said migration; and

enable the write lock of the second storage class after said migration.

6. (Original) The system as recited in claim 1, wherein the file system software is further configured to compress the data migrated to the second storage class.

7. (Original) The system as recited in claim 1, wherein the backup mechanism is further configured to perform said back up of the second storage class without using a split mirror of the second storage class.

8. (Original) The system as recited in claim 1, wherein the file system software is further configured to:

receive a request to modify a portion of the data on the second storage class from one of the applications;

migrate the portion of the data from the second storage class to the first storage class in response to the request; and

modify the portion of the data on the first storage class according to said request.

9. (Original) The system as recited in claim 1, wherein the file system software is further configured to:

receive a request to delete a portion of the data from the second storage class from one of the applications; and

modify file system metadata to indicate that the portion of the data is deleted from the second storage class;

wherein one or more file blocks on the second storage class including the portion of the data are not modified by said deletion of the portion of the data.

10. (Original) The system as recited in claim 9, wherein the file system software is further configured to:

receive a request to restore the deleted portion of the data to the second storage class; and

modify the file system metadata to indicate that the portion of the data is restored on the second storage class;

wherein the deleted portion of the data is not restored from a backup of the second storage class.

11. (Original) The system as recited in claim 1, wherein the plurality of storage classes are ordered in a hierarchy according to one or more characteristics from a highest storage class to a lowest storage class, wherein the first storage class is the highest storage class.

12. (Original) The system as recited in claim 11, wherein the one or more characteristics include one or more of performance and cost.

13. (Original) The system as recited in claim 1, wherein the plurality of storage classes are ordered in a hierarchy according to performance characteristics from a highest storage class comprising one or more highest-performance storage devices to a lowest storage class comprising one or more lowest-performance storage devices, wherein the first storage class is the highest storage class.

14. (Original) The system as recited in claim 1, wherein said migration of the data from the first storage class to the second storage class is transparent to the one or more applications.

15. (Original) The system as recited in claim 1, wherein the file system software is further configured to modify file system metadata for assigned and migrated data to indicate storage classes of the assigned and migrated data, wherein path information in the file system metadata exposed to the applications is not modified.

16. (Original) The system as recited in claim 1, wherein the data includes files or portions of files.

17. (Original) The system as recited in claim 1, wherein the data comprises one or more of application data and file system metadata.

18. (Currently amended) A system, comprising:

a plurality of storage devices;

a host system configured to couple to the plurality of storage devices via a network, wherein the host system comprises:

file system software configured to:

assign and migrate data in a multi-class file system comprising a plurality of storage classes, wherein each storage class comprises one or more of the plurality of storage devices;

provide access to the data in the multi-class file system to one or more applications; and

migrate data that has not been modified for a given time interval from a first storage class of the plurality of storage classes to a second storage class of the plurality of storage classes, wherein the migrated data remains online in the multi-class file system, wherein the data is readable but not modifiable by the one or more applications while the data is on the second storage class; and

a backup mechanism configured to back up the second storage class less frequently than the first storage class.

19. (Currently amended) A system, comprising:

software means for assigning and migrating data in a multi-class file system comprising a plurality of storage classes and for providing access to the data in the multi-class file system to one or more applications;

software means for migrating data that has not been modified for a given time interval from a first storage class of the plurality of storage classes to a second storage class of the plurality of storage classes, wherein the migrated data remains online in the multi-class file system, wherein the data is readable but not modifiable by the one or more applications while the data is on the second storage class;

means for performing backups of the storage classes in the multi-class file system, wherein the second storage class is backed up less frequently than the first storage class.

20. (Currently amended) A method, comprising:

file system software assigning and migrating data in a multi-class file system comprising a plurality of storage classes;

the file system software providing access to the data in the multi-class file system to one or more applications;

the file system software migrating data that has not been modified for a given time interval from a first storage class of the plurality of storage classes to a second storage class of the plurality of storage classes, wherein the migrated data remains online in the multi-class file system, wherein the data is readable but not modifiable by the one or more applications while the data is on the second storage class; and

backing up the plurality of storage classes, wherein the second storage class is backed up less frequently than the first storage class.

21. (Original) The method as recited in claim 20, further comprising:

the file system software migrating data that has not been modified for a longer given time interval from the second storage class to a third storage class of the plurality of storage classes, wherein the data is not modifiable by the one or more applications while the data is on the third storage class; and

wherein the third storage class is backed up less frequently than the second storage class.

22. (Original) The method as recited in claim 20, further comprising:

the file system software migrating data that has not been modified for a longer given time period from the second storage class to a third storage class of the plurality of storage classes, wherein the data is not modifiable by the one or more applications while the data is on the third storage class;

backing up the third storage class after said migrating the data that has not been modified for a longer given time period from the second storage class to the third storage class;

the file system software migrating the data that has not been modified for a given time interval from the first storage class to the second storage class after said migrating the data that has not been modified for a longer given time period from the second storage class to the third storage class; and

backing up the second storage class after said migrating the data that has not been modified for the given time period from the first storage class to the second storage class.

23. (Original) The method as recited in claim 20, wherein said backing up the plurality of storage class comprises:

generating image-based full backups of the second storage class after said migration of the data to the second storage class; and

generating image-based full backups of the first storage class and one or more incremental backups of the first storage class between the full backups of the first storage class.

24. (Original) The method as recited in claim 20, wherein the second storage class is write-locked, and wherein the method further comprises:

disabling the write lock of the second storage class prior to said migration; and

enabling the write lock of the second storage class after said migration.

25. (Original) The method as recited in claim 20, further comprising compressing the data migrated to the second storage class.

26. (Original) The method as recited in claim 20, further comprising:

the file system software receiving a request to modify a portion of the data on the second storage class from one of the applications;

the file system software migrating the portion of the data from the second storage class to the first storage class in response to the request; and

modifying the portion of the data on the first storage class according to said request.

27. (Original) The method as recited in claim 20, further comprising:

the file system software receiving a request to delete a portion of the data from the second storage class from one of the applications; and

the file system software modifying file system metadata to indicate that the portion of the data is deleted from the second storage class;

wherein one or more file blocks on the second storage class including the portion of the data are not modified by said deletion of the portion of the data.

28. (Original) The method as recited in claim 27, further comprising:

the file system software receiving a request to restore the deleted portion of the data to the second storage class; and

the file system software modifying the file system metadata to indicate that the portion of the data is restored on the second storage class;

wherein the deleted portion of the data is not restored from a backup of the second storage class.

29. (Original) The method as recited in claim 20, wherein the plurality of storage classes are ordered in a hierarchy according to one or more characteristics from a highest storage class to a lowest storage class, wherein the first storage class is the highest storage class.

30. (Original) The method as recited in claim 20, wherein the plurality of storage classes are ordered in a hierarchy according to performance characteristics from a highest storage class comprising one or more highest-performance storage devices to a lowest storage class comprising one or more lowest-performance storage devices, wherein the first storage class is the highest storage class.

31. (Original) The method as recited in claim 20, wherein said migration of the data from the first storage class to the second storage class is transparent to the one or more applications.

32. (Original) The method as recited in claim 20, wherein the data includes files or portions of files.

33. (Original) The method as recited in claim 20, wherein the data comprises one or more of application data and file system metadata.

34. (Currently amended) A computer-accessible storage medium, comprising program instructions, wherein the program instructions are configured to implement:

assigning and migrating data in a multi-class file system comprising a plurality of storage classes;

providing access to the data in the multi-class file system to one or more applications;

migrating data that has not been modified for a given time interval from a first storage class of the plurality of storage classes to a second storage class of the plurality of storage classes, wherein the migrated data remains online in the multi-class file system, wherein the data is readable but not modifiable by the one or more applications while the data is on the second storage class; and

backing up the plurality of storage classes, wherein the second storage class is backed up less frequently than the first storage class.

35. (Original) The computer-accessible medium as recited in claim 34, wherein the program instructions are further configured to implement:

migrating data that has not been modified for a longer given time interval from the second storage class to a third storage class of the plurality of storage classes, wherein the data is not modifiable by the one or more applications while the data is on the third storage class; and

wherein the third storage class is backed up less frequently than the second storage class.

36. (Original) The computer-accessible medium as recited in claim 34, wherein the program instructions are further configured to implement:

the file system software migrating data that has not been modified for a longer given time period from the second storage class to a third storage class of the plurality of storage classes, wherein the data is not modifiable by the one or more applications while the data is on the third storage class;

backing up the third storage class after said migrating the data that has not been modified for a longer given time period from the second storage class to the third storage class;

the file system software migrating the data that has not been modified for a given time interval from the first storage class to the second storage class after said migrating the data that has not been modified for a longer given time period from the second storage class to the third storage class; and

backing up the second storage class after said migrating the data that has not been modified for the given time period from the first storage class to the second storage class.

37. (Original) The computer-accessible medium as recited in claim 34, wherein, in said backing up the plurality of storage classes, the program instructions are further configured to implement:

generating image-based full backups of the second storage class after said migration of the data to the second storage class; and

generating image-based full backups of the first storage class and one or more incremental backups of the first storage class between the full backups of the first storage class.

38. (Original) The computer-accessible medium as recited in claim 34, wherein the second storage class is write-locked, and wherein the program instructions are further configured to implement:

disabling the write lock of the second storage class prior to said migration; and

enabling the write lock of the second storage class after said migration.

39. (Original) The computer-accessible medium as recited in claim 34, wherein the program instructions are further configured to implement compressing the data migrated to the second storage class.

40. (Original) The computer-accessible medium as recited in claim 34, wherein the program instructions are further configured to implement:

receiving a request to modify a portion of the data on the second storage class from one of the applications;

migrating the portion of the data from the second storage class to the first storage class in response to the request; and

modifying the portion of the data on the first storage class according to said request.

41. (Original) The computer-accessible medium as recited in claim 34, wherein the program instructions are further configured to implement:

receiving a request to delete a portion of the data from the second storage class from one of the applications; and

modifying file system metadata to indicate that the portion of the data is deleted from the second storage class;

wherein one or more file blocks on the second storage class including the portion of the data are not modified by said deletion of the portion of the data.

42. (Original) The computer-accessible medium as recited in claim 41, wherein the program instructions are further configured to implement:

receiving a request to restore the deleted portion of the data to the second storage class; and

modifying the file system metadata to indicate that the portion of the data is restored on the second storage class;

wherein the deleted portion of the data is not restored from a backup of the second storage class.

43. (Original) The computer-accessible medium as recited in claim 34, wherein the plurality of storage classes are ordered in a hierarchy according to one or more characteristics from a highest storage class to a lowest storage class, wherein the first

storage class is the highest storage class.

44. (Original) The computer-accessible medium as recited in claim 34, wherein the plurality of storage classes are ordered in a hierarchy according to performance characteristics from a highest storage class comprising one or more highest-performance storage devices to a lowest storage class comprising one or more lowest-performance storage devices, wherein the first storage class is the highest storage class.

45. (Original) The computer-accessible medium as recited in claim 34, wherein said migration of the data from the first storage class to the second storage class is transparent to the one or more applications.

46. (Original) The computer-accessible medium as recited in claim 34, wherein the data includes files or portions of files.

47. (Original) The computer-accessible medium as recited in claim 34, wherein the data comprises one or more of application data and file system metadata.